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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/868,601	11/19/2001	David Alan Pears	P 281297	3270

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EXAMINER

SHOSHO, CALLIE E

ART UNIT	PAPER NUMBER
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1714

DATE MAILED: 10/30/2002

8

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/868,601

Applicant(s)

PEARS ET AL.

Examiner

Callie E. Shosho

Art Unit

1714

mk-8

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 November 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims 9-11 and 13-16 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot depend from any other multiple dependent claim. See MPEP § 608.01(n).

Claims 7, 9-11, and 13-16 all recite ink according to or defined in "any one of the preceding claims. Thus, multiple dependent claim 9 is in improper form because it depends on claim 7 which is also multiple dependent. Similarly, multiple dependent claim 10 is in improper form because it depends on claim 7 and claim 9 each of which is also multiple dependent. The same improper dependence is found in claims 11 and 13-16.

In accordance with MPEP § 608.01(n), due to the presence of improper multiple dependent claims, claims 9-11 and 13-16 should not be further treated on the merits. However, in the interest of "compact prosecution", claims 9-11 and 13-16 have been treated as if they were corrected to be in proper multiple dependent form, and the following rejections are given.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 2 and 7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2 recites "water-dissipatable polymer is obtainable by...". The phrase "obtainable" causes confusion in the scope of the claim, because it is not clear if the polymer is actually obtained by the process recited in claim 2 or there is just the possibility to do so. It is suggested that "obtainable" be changed to "obtained". A similar suggestion is also made in claim 7, which also recites "obtainable".

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

5. Claims 1-2, 7, and 9-16 are rejected under 35 U.S.C. 102(e) as being anticipated by Moffatt et al. (U.S. 6,221,932).

Moffatt et al. disclose an ink jet ink comprising liquid medium and 0.001-10% chromophore with covalently attached polymer wherein the chromophore and polymer are attached through ester group. The polymers include hydroxyl-containing polymers such as poly (2-hydroxyethyl) methacrylate and polyethylene glycol that has number average molecular weight of 200-10,000. The liquid medium comprises water and solvent in amounts of, for instance, 10% and 90%, respectively. The ink possesses viscosity of 0.8-8 cP. It is further disclosed that the ink is printed onto substrate such as paper or plastic using an ink jet printer which contains the above ink in an ink jet cartridge (col.2, lines 8-15, col.4, line 30-col.5, line 65, col.7, lines 58-64, col.9, lines 20-30, and example 10). Although there is no explicit disclosure that the chromophore/polymer is completely dissipated in the liquid medium, given that Moffatt et al. disclose polymer and medium identical to that presently claimed and further given that there is also attached to the chromophore one or more organic groups which impart water-solubility, it is clear that the chromophore/polymer would inherently be completely dissipated in the liquid medium.

In light of the above, it is clear that Moffatt et al. anticipate the present claims.

6. Claims 1, 7, and 9-16 are rejected under 35 U.S.C. 102(a) as being anticipated by Foucher et al. (U.S. 5,786,410).

Foucher et al. disclose an ink jet ink comprising 50-99.5% liquid medium comprising water and solvent in ratio of 97:3 – 50:50 and dye covalently attached to dissipatable sulfopolyurethane through -O- linkage. The sulfopolyurethane has number average molecular weight of 1,000-10,000. It is further disclosed that the ink is printed onto substrate such as paper

or transparencies using an ink jet printer which would inherently contain the above ink in an ink jet cartridge (col.4, lines 44-56, col.5, lines 5-15, col.5, line 51-col.6, line 10, col.6, line 67-col.7, line 30, col.7, lines 58-60, and col.8, lines 40-43 and 57-65). From col.12, lines 39-49, it is calculated that the ink comprises, for instance, 15% sulfopolyurethane/dye (0.25(12)/20) and possesses viscosity less than 20 cP.

In light of the above, it is clear that Foucher et al. anticipate the present claims.

7. Claims 1, 4, and 7-16 are rejected under 35 U.S.C. 102(e) as being anticipated by Sacripante et al. (U.S. 6,251,987).

Sacripante et al. disclose an ink jet ink comprising 50-99.5% liquid medium comprising water and solvent in ratio of 97:3 – 50:50 and 0.5-5% colored resin emulsion wherein the resin is derived from olefinic monomer such as polyethylene glycol methacrylate and (meth)acrylic acid and possesses number average molecular weight of 2,000-150,000. The colored resin is obtained by reacting the dye with bridging compound, i.e. acid chloride, which product is then reacted with the olefinic monomers described above. The ink has viscosity less than 20 cP. It is further disclosed that the ink is printed onto substrate such as paper or transparencies using an ink jet printer which would inherently contain the above ink in an ink jet cartridge (col.3, lines 2-10, 40-54 and 55-59, col.4, lines 5-7 and 36-44, col.5, lines 48-50, col.6, lines 39-47, col.7, lines 17-25, col.6, line 66-col.8, line 3, col.8, lines 26-30, col.10, lines 26-37, and Table 1). Although there is no explicit disclosure that the colored resin is completely dissipated in the liquid medium, given that Sacripante et al. disclose colored resin and medium identical to that presently claimed, it is clear that the colored resin would inherently be completely dissipated in the liquid medium.

In light of the above, it is clear that Sacripante et al. anticipate the present claims.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 1-7, 9-11, and 13-16 rejected under 35 U.S.C. 103(a) as being unpatentable over Pawlowski (U.S. 5,230,733) in view of Tsutsumi et al. (U.S. 6,031,019).

Pawlowski disclose an ink jet ink comprising at least 80% liquid medium and 1-15% chromophore with covalently attached polymer wherein the chromophore and polymer are attached through ether group. The polymers contain at least one hydroxyl group and possess number average molecular weight of 180-10,000. The chromophore is attached to the polymer by reacting dye with bridging compound, converting the resulting species to an amide, followed by diazotisation and coupling to the polymer. It is further disclosed that the ink is printed onto substrate such as paper using an ink jet printer which contains the above ink in an ink jet cartridge (col.1, lines 36-38 and 60-62, col.2, lines 50-55, col.3, lines 13-63, col.4, lines 42-46, and col.6, lines 65-68). Although there is no explicit disclosure that the chromophore/polymer is completely dissipated in the liquid medium, given that Pawlowski disclose chromophore/polymer and medium identical to that presently claimed, it is clear that the chromophore/polymer would inherently be completely dissipated in the liquid medium.

The difference between Pawlowski and the present claimed invention is the requirement in the claims of the viscosity of the ink.

While Pawlowski disclose ink comprising water-dissipatable polymer covalently attached to colorant and liquid medium, there is no disclosure of the viscosity of the ink.

Tsutsumi et al., which is drawn to ink jet ink comprising colored resin emulsion, disclose that the ink possesses viscosity of 0.5-8 cP in order to produce ink that does not feather and ejects adequately from the printer (col.12, lines 44-54).

In light of the motivation for using ink jet ink with specific viscosity disclosed by Tsutsumi et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to control the viscosity of the ink jet ink of Pawlowski to such viscosity in order to produce ink that does not feather and ejects adequately from the printer, and thereby arrive at the claimed invention.

11. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pawlowski in view of Tsutsumi et al. as applied to claims 1-7, 9-11, and 13-16 above, and further in view of Sacripante et al. (U.S. 6,251,987).

The difference between Pawlowski in view of Tsutsumi et al. and the present claimed invention is the requirement in the claims of amount of water and solvent.

Sacripante et al., which is drawn to ink jet ink comprising colored resin emulsion, disclose the use of liquid medium which comprises water and solvent in ratio of 97:3 to 50:50 (col.7, line 66-col.8, line 3).

In light of the motivation for using specific amount of water and solvent disclosed by Sacripante et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use these amounts of water and solvent in the ink jet ink of Pawlowski in order to produce ink with suitable drying rate, and thereby arrive at the claimed invention.

12. Claims 1-2, 7-9, 11, and 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikeda et al. (U.S. 5,952,429) in view of Tsutsumi et al. (U.S. 6,031,019).

Ikeda et al. disclose ink jet ink comprising liquid medium containing water and solvent and 1-20% carbon black grafted polymer which comprises carbon black attached to polymer through ester or ether linkage. The polymers include hydroxyl-containing polymers that possess number average molecular weight of 1,000-100,000. The carbon black is attached to the polymer by reacting functional group on carbon black with reactive group on polymer. It is further disclosed that the ink is printed onto substrate such as paper or film using an ink jet printer which would inherently contain the above ink in an ink jet cartridge (col.1, lines 36-38 and 60-62, col.2, lines 50-55, col.3, lines 13-63, col.4, lines 42-46, and col.6, lines 65-68). Although there is no explicit disclosure that the polymer with attached colorant is completely dissipated in the liquid medium, given that Ikeda et al. disclose polymer with attached colorant and medium identical to that presently claimed, it is clear that the polymer with attached colorant would inherently be completely dissipated in the liquid medium.

The difference between Ikeda et al. and the present claimed invention is the requirement in the claims of the viscosity of the ink.

While Ikeda et al. disclose ink comprising water-dissipatable polymer covalently attached to colorant and liquid medium, there is no disclosure of the viscosity of the ink.

Tsutsumi et al., which is drawn to ink jet ink comprising colored resin emulsion, disclose that the ink possesses viscosity of 0.5-8 cP in order to produce ink that does not feather and ejects adequately from the printer (col.12, lines 44-54).

In light of the motivation for using ink jet ink with specific viscosity disclosed by Tsutsumi et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to control the viscosity of the ink jet ink of Ikeda et al. to such viscosity in order to

produce ink that does not feather and ejects adequately from the printer, and thereby arrive at the claimed invention.

13. Claims 10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikeda et al. in view of Tsutsumi et al. as applied to claims 1-2, 7-9, 11, and 13-16 above, and further in view of Sacripante et al. (U.S. 6,251,987).

The difference between Ikeda et al. in view of Tsutsumi et al. and the present claimed invention is the requirement in the claims of amount of water and solvent.

Sacripante et al., which is drawn to ink jet ink comprising colored resin emulsion, disclose that the ink comprises 50-99.5% liquid medium which comprises water and solvent in ratio of 97:3 to 50:50 (col.7, line 66-col.8, line 3 and col.8, lines 25-30).

In light of the motivation for using specific amount of water and solvent disclosed by Sacripante et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use these amounts of water and solvent in the ink jet ink of Ikeda et al. in order to produce ink with suitable drying rate, and thereby arrive at the claimed invention.

14. Claims 1 and 3-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsutsumi et al. (U.S. 6,031,019) in view of Swanson et al. (U.S. 4,381,185).

Tsutsumi et al. disclose ink jet ink comprising 50-98% water, 1-30% solvent, and 1-30% colored resin emulsion wherein the resin is (i) obtained from monomers including hydroxyalkyl (meth)acrylate and (meth)acrylic acid and possesses weight average molecular weight of 3,000-50,000 or (ii) is obtained from polyester and possesses number average molecular weight of

2,000-15,000. The ink has viscosity of 0.5-8 cP. It is further disclosed that the ink is printed onto substrate such as paper using an ink jet printer which would inherently contains the above ink in an ink jet cartridge (col.4, line 53-col.5, line 7, col.6, lines 57-65, col.7, lines 9-12, col.9, lines 1-2 and 17-21, col.11, lines 27-30 and 56-67, col.12, lines 44-45, col.14, lines 41-43, and col.15, lines 5 and 41-43). Although there is no explicit disclosure that the colored resin is completely dissipated in the liquid medium, given that Tsutsumi et al. disclose colored resin and medium identical to that presently claimed, it is clear that the colored resin would inherently be completely dissipated in the liquid medium.

The difference between Tsutsumi et al. and the present claimed invention is the requirement in the claims of specific colored resin.

Swanson et al., which is drawn to ink for printing paper, disclose polymeric colorant, i.e. colored resin, obtained by coupling chromophore precursor to polymeric backbone wherein the colorant is attached through ester or ether linkage and the polymer includes polyacrylic acid or polyvinyl alcohol. If a colorant precursor is used, it is converted to colorant by diazotisation and coupling as presently claimed (col.3, lines 22-41, col.4, lines 24-28 and 38-42, col.6, lines 33-36, col.11, lines 1-4, col.15, lines 55-57, col.17, line 55, and col.19, line 20). The motivation for using such polymeric colorant is to produce waterfast print (col.1, lines 58-60).

In light of the motivation for using specific polymeric colorant, i.e. colored resin, disclosed by Swanson et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use such polymeric colorant in Tsutsumi et al. in order to produce ink which produces waterfast prints, and thereby arrive at the claimed invention.

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hegar et al. (U.S. 4,141,890) disclose azo compound, however, there is no disclosure of polymer with colorant attached through -O- linkage as presently claimed.

FR 1,523,820 discloses polymer dyes made by coupling diazonium compounds with addition polymer which contain coupling agents, however, there is no disclosure of dye attached to polymer through covalent -O- linkage. Further, there is no disclosure of number average molecular weight of the polymer.

Wingard Jr. et al. (U.S. 4,375,357) disclose colorant attached to polymer backbone through azo group not -O- linkage as presently claimed.

Wiesenfeldt et al. (U.S. 5,264,507), which corresponds to EP 535490, disclose azo dye polymers, however, there is no disclosure of ink, viscosity or number average molecular weight of polymer as presently claimed.

GB 1,377,067, which corresponds to FR 2,107,876, discloses polymer with reactive sites which is further reacted with colorant having reactive groups, however, there is no disclosure of ink, viscosity or number average molecular weight of polymer as presently claimed.

Machell et al. (U.S. 5,231,135) disclose colored polymer coating which comprises polymer, linking agent, and reactive colorant which are reacted together.


Johnson et al. (U.S. 6,432,194) disclose ink comprising modified pigment comprising pigment attached to polymer through ester group, however, there is no disclosure of the viscosity of the ink or number average molecular weight of polymer as presently claimed.

Baumgartner et al. (U.S. 4,812,141) disclose colored thermoplastic resin wherein colorant is prepared by converting dyestuff intermediate by diazotisation.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie E. Shosho whose telephone number is 703-305-0208. The examiner can normally be reached on Monday-Friday (6:30-4:00) Alternate Fridays Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 703-306-2777. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.


Callie E. Shosho
Examiner
Art Unit 1714

CS
October 26, 2002